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AUTHOR	Donaldson, Weber D., Jr.
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ABSTRACT

On the basis of evidence from general linguistic theory and psycholinguistic research, it is argued that the working hypotheses of the audiolingual habit theory are inconsistent with studies of human verbal learning tasks, and that transformation grammarians have shown convincingly that structuralist views of language are too narrow in scope. It is further argued that audiolingual precepts are intrinsically unsound and that modifying present approaches and techniques is not a viable solution. The cognitive code theory of language learning is seen as representing a truer picture of language and language acquisition. It is proposed that the cognitive code theory should be central to any method of foreign language instruction. Basic assertions underlying cognitive code theory are outlined, and the implications of their application to language teaching are examined. (MSE)

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CODE-COGNITION APPROACHES TO LANGUAGE LEARNING

Weber D. Donaldson, Jr.

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Code - Cognition Approaches to Language Learning

Weber D. Donaldson, Jr.
Tulane University

The decade of the 70's will bear witness to a major confrontation in applied linguistics and foreign language teaching. Indeed, the confrontation is already here. Chomsky has superceded the authority of the neo-Bloomfieldians, and Skinner's attempts to describe human verbal behavior on the basis of external factors alone has not proved successful. What we as applied linguists and language teachers are faced with is a psycholinguistic upheaval which is the very touchstone of our profession. The theoretical foundations of our assumptions about the nature of language and how it is acquired have been badly shaken if not actually destroyed. We have discovered rather late that we have been teaching *speech* and not *language*. The language-speech distinction I am referring to is related to the *competence-performance* distinction made by Chomsky (1965) where competence refers to the speaker-hearer's knowledge of his language and where performance refers to his use of language in concrete situations. Since these terms apply to one's native tongue and not to a second language, I shall accordingly modify and extend the meaning of these terms to a target language situation. Competence, as regards second language learning, will be taken to mean native language competence plus an active knowledge of the target language rules which differ from the native language. Performance will be taken to mean the use of the target language in new and innovative contexts. Audiolingual approaches of the 50's and 60's for the most part ignored *language*, believing that imitating target performance or speech was sufficient means to the end of complete control of the foreign tongue. Structuralist or neo-Bloomfieldian views that language is speech and that the acquisition of first language "speech" is learned chiefly through experience and sound signals, significantly influenced audiolingual methods. This view of language as speech learned from experience was extended and embraced by applied linguists as relevant to second language learning. The emphasis of speech *over* and *to* the exclusion of language is perhaps only a venial sin but the behaviorist position adopted in the last two decades that language is empirically acquired — and ergo so is a second language — is, however, a mortal sin. In some heady moments of scientism, audiolingualists have told us that eighteen year old freshmen are not rational human beings and should be kept from intellectualizing about foreign language. Fortunately, such extreme positions have been mollified if not retracted. Nevertheless, there is a puzzling reticence among these same seers to talk to the crucial issues of language and language acquisition. Our real task is to find out as much as we can about the nature of language and what psychologists have to tell us about verbal

learning, viz., what the body of knowledge is that has been accumulated — and claimed factual — and how it relates to what applied linguists are now saying and what publishing houses are now printing. In the light of psycholinguistic investigation and research, we have two second-language theories to consider: (1) the audiolingual habit theory, and (2) the cognitive code-learning theory along with the possibility of modification of one theory by the other. The following description by Carroll (1966, 101-2) serves to delimit these two opposing theories of second language learning quite clearly.

> The audiolingual habit theory, which is more or less the "official" theory of the reform movement in foreign language teaching in the United States, has the following principal ideas: (1) Since speech is primary and writing is secondary, the habits to be learned must be learned first of all as auditory-discrimination responses and speech responses. (2) Habits must be automatized as much as possible so that they can be called forth without conscious attention. (3) The automatization of habits occurs chiefly by practice, that is, by repetition. The audiolingual habit theory has given rise to a great many practices in language teaching: the language laboratory, the structural drill, the mimicry-memorization technique, and so forth. The cognitive code-learning theory, on the other hand, may be thought of as a modified, up-to-date grammar-translation theory. According to this theory, learning a language is a process of acquiring conscious control of the phonological, grammatical, and lexical patterns of a second language, largely through study and analysis of these patterns as a body of knowledge. The theory attaches more importance to the learner's understanding of the structure of the foreign language than to his facility in using that structure, since it is believed that provided the student has a proper degree of cognitive control over the structures of the language, facility will develop automatically with use of the language in meaningful situations.

I shall argue that on the basis of evidence from general linguistic theory and psycholinguistic investigation that the working hypotheses of the audiolingual habit theory are inconsistent with the findings of studies dealing with human verbal learning tasks and that transformational grammarians have shown quite convincingly that structuralist views of language are too narrow in scope. I shall argue further that audiolingual precepts are intrinsically unsound and that modifying present approaches and techniques is not a viable solution. I shall claim that the cognitive code theory of language learning represents a truer picture of what language and language acquisition is like and should, therefore, be central to any method of foreign language instruction.

I will first draw up a series of statements which I believe should underlie a cognitive code-learning theory, a canon whose authority rests upon the

nature of language, the findings of psycholinguistic research, and personal experience as a teacher of French. The following assertions are first listed and then expanded by a discussion.

Central to any foreign language program are the following assumptions: (1) *Language* is primary; speech and writing are of secondary importance since both are outputs of *language*. Speech and writing, which are on an equal footing, cannot be separated from syntax and morphology. (2) *Language* is innately specified but also empirically acquired. (3) Perception and awareness of the structure to be learned must be made meaningful. The above principles are diametrically opposed to the tenets of the audiolingual habit theory where speech is primary and where speech is considered as a habit formation to be learned from a phonetic signal where perceptual analysis proceeds from the signal to interpretation. The primacy of speech and the absence of *language* is easily inferred from the following audiolingual dictums listed by Nelson Brooks (1961, 16,18):

> Language is something you understand and say BEFORE it is something you read and write. . . . Language learning for communication involves the learning of all the skills: hearing, speaking, reading, writing — *and in that order* [my emphasis]. These are not engaged in simultaneously from the start. A period of at least some months . . . in which the student only hears and speaks must precede the introduction to reading and writing. . . . [A language learning program] does not permit the student to have constant recourse to a printed script.

According to these statements, speech and writing are separate functions and the ear comes before the eye. The authority for such claims is presumably based upon first language acquisition and a commitment to a belief that language is learned chiefly through experience alone. There is absolutely no evidence — at least that I am aware of — to validate such assumptions. Evidence would, to the contrary, appear to negate these claims. As Chomsky has stated (1966, 49), "there is good reason to believe that even the identification of the phonetic form of a sentence presupposes at least a partial syntactic analysis, so that the rules of the generative grammar may be brought into play even in identifying the signal." Let us explore this important point and assume that we are going to teach the possessive pronouns in French solely on the basis of auditory-discrimination and speech responses. Let us construct a simple substitution drill where the only cue to a change in meaning is a sound signal. We shall begin with the sentence, *Voilà mon soldat* and then substitute the items *ton, son, notre, votre,* and *leur* in place of *mon* (the English equivalents of the French will not be given in order to simulate audiolingual texts where drills are never translated; meaning is obviously considered sub-

ordinate). It is true that the substituted items do signal a difference in meaning and provided that the student knows what he is saying, he can rely on the signals [tõ], [sõ], [nòt] or [nòtrə], [vòt] or [vòtrə], and [loer] to change this meaning. If the noun *Anglais* replaces *soldat* and the same lexical items are similarly substituted as in *Voilà mon Anglais*, new phonetic shapes will be heard. The new forms will now be [tòn], [sòn], [nòtr], and [vòtr]. With the addition of more nouns, the student may correctly induce that the "fuller" forms occur with pre-vocalic nouns and that the "elliptical" variants precede nouns beginning with a consonant. If the feminine singular forms are introduced — along with the masculine and feminine plural forms making a total of twenty-seven spoken forms — he simply cannot keep this information straight without "outside" information. He must know (1) the number and gender of these nouns, (2) that agreement is with the noun and not the possessor, and (3) what the morpho-syntactic relations are. Imagine, if you will, a student as a blank slate inducing this information from a sound signal without recourse to explanation of this information. The different phonological shapes that words and morphemes can have in certain environments (morphophonemics) also involves the interaction of syntax as well as that of phonology and morphology; not all pre-vocalic environments in French, for example, call for pre-vocalic morphemic variants. The following examples illustrate the syntactic constraints on morphemes in a very graphic way. In utterances such as *mon savant Anglais* 'my scholarly Englishman' [mõsavãtãglé] vs. *mon savant/anglais* 'my English scholar' [mõsavãglé], the sound signal feature [t] indicates a different syntactic relationship: [t] signals that *savant* 'scholarly' is an adjective and *Anglais* 'Englishman' is a noun; the absence of [t] in the second example reverses the parts of speech of these words. Unless the student is told that liaison always occurs with prenominal adjectives (i.e., in close syntactic link) but is never realized with singular post-nominal adjectives (i.e., in open syntactic link) he will never intuit or induce this information himself much less be able to use it in new speech situations. Recourse to the printed word, however, would help him to discover this information since *Anglais* in *mon savant Anglais* 'my scholarly Englishman' is capitalized. (It should be pointed out that French unlike English has no phonemic word boundaries so that the possibility of determining the part of speech or the word division on the basis of suprasegmental features is automatically ruled out). Aside from obvious archaisms, French spelling is an extremely valuable aid in helping the student to recognize and control the morphemic variants. French spelling is, of course, morphophonemic in design and as such is far more revealing than either some idealized phonetic or phonemic transcription. Morphosyntactic information and the rules needed to form new utterances simply cannot be induced from a sound signal alone since different levels of language are involved in the signal. What I am suggesting is the concept of a gestalt, where the total structure is perceived as

a unit, and not as an arbitrary piecemeal examination of the segmented parts of that whole. Each one of the parts of language — phonology, morphology, and syntax — are interdependent. This syntactic analysis is given some psycholinguistic support by Carroll (1966, 105), who says that "other things being equal, materials presented visually are more easily learned than comparable materials learned aurally."

The second assumption underlying a cognitive code theory of second language learning relates to the problem of language acquisition. There are two viewpoints: a rationalist and an empiricist view of how language is learned. Transformational grammarians are often labeled as rationalists because they stress that language is primarily innately specified; empiricists, on the other hand, believe that language is learned mainly through experience, i.e., that we have no special inborn capacity to learn language and that we are all blank slates. This *tabula rasa* concept is very closely allied to B. F. Skinner's position that human verbal behavior can be described in terms of external factors. But as Chomsky has pointed out most tellingly, it is quite surprising that Skinner's research into human verbal behavior has completely neglected the fact that man is by definition "the one who thinks" and that this variable sets him apart from lower animal life. Chomsky says (1959, 27) that "one would naturally expect that prediction of the behavior of a complex organism (or machine) would require, in addition to information about external stimulation, knowledge of the internal structure of the organism, the ways in which it processes input information and organizes its own behavior." The audiolingual habit theory approach is manifestly linked to this behaviorist view of language; it is also based on the apparent belief that second language learning, in a high school or college setting, is analoguous to a very small child in a bilingual environment. There is no evidence to substantiate either assumption and every reason to believe that both are false.

A cognitive code theory of language learning has at its base a rationalist concept of language, but it does not deny the role of empiricism. As Ronald W. Langacker (1968, 236) puts it, a child is born with "innate neural equipment . . . and he has only to learn those details of structure that differentiate the language around him from other possible human languages. He has only to put flesh on the skeletal linguistic system he already possesses." The "putting on of flesh" is empirically acquired to some extent. The evidence for innate specification is quite strong, however, and a theory of second language learning must come to grips with it; most audiolingualists have chosen to ignore it. That there is the decided advantage to positive transfer (interference) — and I am referring to competence — from the native to target language has been obscured in my opinion by the structuralist view that the target language should not be *overtly* described in terms of the native language although contrastive

analysis is allegedly the basis of the target language materials. This paradox is explained in part by taxonomic descriptions of one language after another without regard to general linguistic theory. Thus a presentation of French without reference to English — even though drills are *covertly* based on contrastive analysis — somehow appears to be more "scientific." This monolingual description of the target language without an overt comparison of interference is a harmful deterrent to the student; it keeps him from transferring those positive points of interference of his mother tongue to the target language. Audiolingualists do not see French and English as belonging to a common structure. A cognitive code theory indeed does, and would emphasize those similarities which are not self-evident *before* pointing up negative interference or transfer. This conscious or active knowledge of the points of interference between the two languages might be given some empirical support by the following remarks by Carroll (p. 104). He reminds us that "the frequency with which an item is practiced per se is not as crucial as the frequency with which it is contrasted with other items with which it may be confused." Another point made by Carroll — presumably from performance on a verbal learning task — is that conscious and not unconscious attention to the critical features of a learning skill seem to facilitate learning. This appears to be rather damaging testimony to those supporting a type of automatic response by repetition where the role of conscious attention to a learning task is minimal or non-existent. I am quite puzzled by the efforts of audiolingual advocates to foster and encourage conscious obscuration. I suspect, however, that it is once again of structuralist origin and inspiration: the old hobgoblin of mentalism and meaning. This may be one of the reasons which led Politzer (1965, 25) to caution that "perception or awareness of the complete pattern underlying any utterance is likely to take place sooner or later and with this awareness the danger inherent in the student's rationalizing and thinking about the pattern will again come into being." According to this reasoning — one calculated to circumvent intellectualizing — the student is actually being discouraged from analogizing inductively! As late as 1964, Politzer is in effect telling teachers to keep the student in the dark about what he is doing, bemoaning the fact that "there is probably no general cure against the type of interference that comes from clinging to intellectual understanding in favor of automatic responses" (p. 25). Many text book writeres have followed this advice almost to the letter: pattern drills are never translated or made meaningful and items substituted in exercises often have no relation whatsoever to the point of grammar allegedly introduced for inductive purposes. Grammatical explanations are often spotty and frequently relegated to footnote status. There are a number of verbal learning studies, however, which would appear to support the role of meaning in learning tasks. In an article by Charles D. Speilbeerger (1967, 97-121), "Theoretical and Epistemological Issues in Verbal Conditioning," a series of investigations was carried out to test the validity of behaviorist claims

which assert that verbal conditioning experiments provide evidence of learning without awareness and that subjects can be conditioned unconsciously through the use of reinforcement. In a series of four experiments, it was found that performance gains on a verbal conditioning task were limited only to subjects who were aware of the information supplied by the reinforcing stimulus. There was little evidence in the studies reported by Speilberger of learning without awareness or of the direct and automatic efforts of verbal reinforcement as claimed. The claim that precise predictions of verbal behavior need only the specifications of relevant external factors was negated. The findings of these experiments, as well as those reported by Carroll (1966, 105), who states that "the more meaningful the material to be learned, the greater the facility in learning and retention" should more than cast doubt on a habit formation theory which emphasizes automaticity over meaning.

What are the consequences of a rejection of the basic assumptions underlying audiolingual habit theory? A return to grammar-translation theory? A return to its rationalist assumptions about the nature of language, yes, but not to its practices and limited objectives of analysis for the sake of analysis and the exclusive cultivation of only two language skills, i.e., reading and writing. How does a cognitive code approach to language learning differ then from a grammar-translation theory? First of all, it should recognize the existence of speech and the skills of listening comprehension and speaking. It should be a four skills approach, but not in the manner of audiolingual habit theory. The four skills should be practiced simultaneously after the presentation of explicit grammatical rules. Practice of all skills — but practice based upon study and analysis — is a prime objective. Practice, however, does not simply mean repetition, or mimicry-memorization. It means challenging trial and error combinations never before heard or uttered. The terminal behavior should, after all, be stimulus-free, a recognition that competence and not performance is what determines the student's ability to master the active (and passive) skills of the target tongue. Unlike grammar-translation methods, the student should always have recourse to a correct answer, but unlike audiolingual pattern drills, he will not be asked to repeat and memorize chunks of language for the dubious purpose of acquiring an automatic response. From my own personal observations, the only automatic response a student acquires is a response to material he has memorized. As Rivers (1964, 67) has observed, "practice of the right response should be conducted in such a manner that the student understands in what way the response is 'right,' which will facilitate the transfer of the response to appropriately similar situations." Meaning should always play a central role in practice; the arbitrary ban on translation should be rescinded and constant attention should be drawn to the target language structure, i.e., its form and its function. Since speech is an integral part of a cognitive code theory, the language lab is to play an

important but ancillary function. Tape scripts should no longer contain mindless structure drills and dialogues for memorization; instead, graded exercises and test-type drills should be emphasized. Perhaps running grammatical explanations — a type of teaching tape — could accompany illustrative language examples. Where positive transfer occurs, translation from native to target language could be used; where negative transfer exists, the target language could be given first followed by a literal English translation and/or grammatical explication. The French for *Tu me manques* 'I miss you,' could be explained by the English anachronism 'You do me lack,' in addition to a reminder — still on tape — that the subject-object roles are reversed. In a structure drill where a text has the model sentence *Qui vous les a demandés*? 'Who asked you for them?', the student must be told that in French one asks *something to someone,* i.e., *demander quelque chose à quelqu'un.* The meaning in this example should also be explained by the form and function of the French pronouns; the student must be aware of this before repeating the model and attempting to use this verb in a stimulus-free context. Only by making the student aware of meaning, can we know if he has understood the rule and whether he can apply it. In audiolingual drills, neither the student's knowledge of the rule — indicating whether he understood the grammatical principle for analogical purposes — nor his use of it in new stimulus-free contexts was ever a real concern of the 50's and 60's.

These few glimpses or suggestions as to what the implementation of a cognitive code approach might look like are only that. I might point out that they are not new nor terribly original. They are, however, abreast of current thinking with regard to research in linguistics and psycholinguistics. They do take into account findings from verbal learning experiments and they do represent both an "inward" and "outward" view of the nature of language. It would seem that the broader base of a cognitive code theory of language learning might represent a more reasonable framework for the implementation of a foreign language program than the working assumptions of the past two decades.

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